CHAPTER 3 - PUBLIC STREET AND TRAFFIC STANDARDS

1. WIDTHS

   A. All street classifications shall conform to the latest adopted Circulation Element of the General Plan and any special plan thereto (refer to Supplemental Standard Drawing GS-1).

   B. Street widths shall be in accordance with Table A.

   C. Intersection of arterials, depending on estimated traffic volumes, may require special design. The use of single and double left-turn pockets, free right-turn lanes, right-turn islands, raised medians, etc., may be required.

   D. Where feasible, when streets are improved for only one-half width, the unimproved half shall drain away from the paved section and shall be provided with a paved ditch or adequate drainage facility, as approved by the City Engineer. A 2" x 6" redwood header shall be required at the edge of paving.

   E. Where half-street improvements are required for streets, the developer of the first half is required to install the half-street section plus 12' of additional paving except for secondary, prime or major arterials.

   F. Local residential streets may be required to incorporate traffic calming measures as approved by the City Engineer. These measures may include: pop-outs, chokers, pavement treatment, medians, and traffic circles.

2. GRADES

   A. Vertical curves are required when grade breaks exceed 1.5%.

   B. Normal crown slope on A.C. pavement shall be 2.0%.

   C. Grades greater than 12% shall be constructed of Portland Cement Concrete or thickened asphalt section and shall have a rough texture surface. Grades steeper than 12% or 12% grades in excess of 400' in length require the prior approval of the City Engineer.

   D. All street plans shall extend horizontal and vertical design a minimum of 200' beyond property line to demonstrate the feasibility of future extension. For collector streets and above, an extension of a minimum 500' shall be shown. Longer extensions may be required by the City Engineer. For newly developing areas, an alignment study may be required with each project to show "overall circulation picture."

   E. For all collector-to-arterial and arterial-to-arterial intersections, the improvement plans shall include a 20-scale plan view of the intersection detailing surface elevations on 10' x 10' grid locations. Extend grid elevations to a minimum of 50' beyond the BCR (similar requirements for collector-to-collector intersections may be required.)

   F. All street widening plans shall include working copies of cross-sections not to exceed 50' on center. Additional cross-sections may be required where design situations develop.

3. ALIGNMENT

A. Streets shall normally intersect at right angles. Local streets shall have at least 50' of tangent adjacent to an intersection, measured from extension of the curb face. Collectors shall have at least 100'. Arterials will require special design. An angle of intersection more than 10° from a right angle requires special approval and design. Hillside terrain will require special design.

B. The centerline of streets entering upon opposite sides of any given street shall normally be offset by at least 200' for local residential streets measured from centerline to centerline. Cul-de-sac streets shall normally be designated as "T" type intersections, and may be offset at 150'.

C. Single entry developments may be permitted when the single entry street meets the following standards:

1) With special approval of the City Fire Marshal, a 36-foot curb-to-curb residential street that serves 24 or less units.

2) With special approval of the City Fire Marshal and City Engineer, a 4-lane secondary arterial with a raised median or major arterial and all of the following conditions are met:

a) The length of street does not exceed one-half mile.
b) Traffic volume at entrance does not exceed 3000 ADT.
c) Buildings are sprinklered

3) With special approval of the City Fire Marshal and City Engineer a 52-foot wide curb-to-curb industrial street and all of the following conditions are met:

a) The length of street does not exceed one-half mile.
b) Traffic volume at entrance does not exceed 3000 ADT.
c) Buildings are sprinklered

D. Minimum length of tangent between reversing curves shall be 100'. A lesser length may be used for local streets or hillside streets with the approval of the City Engineer.

E. All corner returns for local and residential collector streets shall have a minimum 20' property line radius; arterial streets shall have a minimum property line radius of 25'. Arterial streets may require special design.

4. STRUCTURAL SECTION

A. Design shall be for a 20 year service life in accordance with the California Department of Transportation Highway Design Manual.

B. The preliminary design structural section shall be based upon recommendations contained in the preliminary soils report. Verification tests and core samples are required. When sub-grade is exposed, specific "R" value tests shall be performed in accordance with California Test Method (CTM) 301 by a qualified soils laboratory at locations approved by the City. If recommendations are less than the minimum thickness for the proposed roadway, the City's minimum standard structural section shall be used. In either case, the City Engineer shall review the "R" value tests and approve the recommendations for thickness of the structural section prior to placement of base and asphaltic concrete pavement.

C. Sub-grade samples having R-values less than 12 require special design by the soils engineer. Lime treatment may be considered if the subgrade is to be lime treated then it shall be rerun using hydrated lime and both the non-treated and treated samples shall be submitted for review and approval. Percent lime for R-value tests will be determined by the soils engineer. The sulfate content of the soil to be treated will be determined by CTM 417 and reported. Caltrans form TL-361 shall be submitted with structural section submittal. The minimum lime treated subgrade thickness shall be 8". The lime treated section shall be in accordance with Section 301-5, SSPWC. The soils engineer shall supervise and provide quality control during the soil stabilization process.

D. Extend aggregate base of roadway under curb/gutter to 6" behind back of curb. Thickness of aggregate base shall be the same as the approved structural section to a maximum of 6".

5. CURBS

A. Use 6" curb face with 18" gutter (SDRSD G-2) unless 8" is required for drainage.

B. Median curbs shall be per GS-18.

6. CROSS-GUTTERS

A. All cross-gutters shall be 10' minimum width and conform with San Diego Regional Standard Drawing G-12, unless otherwise approved by the City Engineer.

B. No cross-gutters shall be allowed on streets classified above collector. Any variance will require the specific approval of the City Engineer.

C. Mid-block cross gutters are only allowed with specific approval of the City Engineer.

7. SIDEWALKS

A. Sidewalks shall be installed along both sides of all streets except hillside streets and shall be located non-contiguous with the curb for local residential streets unless an alternate location is approved by the City Engineer.

B. The minimum width for sidewalks in any zone shall be 5.0'. A 4.0' minimum clearance shall be maintained around all obstructions such as street lights, mailboxes, fire hydrants, guardrail, etc. Transitions at obstacles shall be four-to-one (4:1). Sidewalks around curb returns shall be widened on all collector and above designated arterials to provide for future traffic signals, street lights and mounting posts and handicap ramps.

C. Sidewalk ramps shall be required at all intersections where sidewalks are required and shall conform with the plans and SDRS Drawings or as directed by the City Engineer.

D. Meandering sidewalks require prior approval from the City Engineer.

8. SIGHT DISTANCE

A. Roadway Sight Distance: Sight distances shall be in accordance with CALTRANS Highway Design Manual (current edition).

B. Intersection Sight Distance: The design of intersection sight distance within the City will be governed by Topic 405 of the California Department of Transportation HIGHWAY DESIGN MANUAL with the following additions and clarifications:

1) Local/collector intersections and above follow CALTRANS requirements. Signalized intersections must be designed with corner sight distance requirements.

2) The edge of traveled way shall be considered to be the extension of the face of curb for the purposes of determining driver setbacks. Where temporary or interim connections are made to roads without curbs and gutters, the travel way shall be the edge of pavement.

9. STREET TREES AND LANDSCAPING

A. All parkways and medians shall be landscaped and irrigated as required by City of Carlsbad Landscape Manual, Standard Drawing GS-8, and applicable Municipal Code.

B. All plans for landscape and irrigation systems intended for public right-of-way and maintenance by the City of Carlsbad shall be drawn on City standard mylar sheets and shall be filed with the improvement plans for the respective project. All other landscape and irrigation plans shall be separated for review and approval by the Planning Director.

C. All irrigation systems shall delineate water main connection, meter location and all valves and backflow preventers.

D. All irrigation systems shall include flow calculations for each specific head proposed and estimated coverage/saturation projections.

E. All medians shall include drainage systems to drain runoff water, but not surface flow across streets. Medians shall be straight graded, not crowned, even in super-elevated streets. All stamped concrete shall have thickened edges and use 4" x 4" or 6" x 6" x #10 x #10 welded wire mesh. Felt shall be used on all weakened plane joints.

F. All landscape shall be designed, installed and maintained to ensure adequate provision for corner sight distances.

G. The following items are not to be located in the median: controller cabinets, backflow preventer, water meters, or any equipment which projects above the surface.

10. STREET LIGHTS

A. Street lighting shall conform to the Caltrans Standard Specifications section 86 and Standard Plans, and the City of Carlsbad Standard Special Provisions for Construction.

B. Spacing:

1) Street lights will be required at all intersections and spacing shall be in conformance with the attached Table B.

2) Street lights shall normally be located on the outside of curves. Mast arm length shall be 8'.

C. Luminaire:

1) Only 9,500 lumen (100 watt) and 22,000 lumen (200 watt) lights shall be used unless specific approval of the Public Works Director is obtained.

2) Traffic signal safety lighting shall be 30,000 lumen (250 watt).

D. Foundations:

1) Street light foundations shall be anchor base type in accordance with SDRSD E-1 and E-2.

2) Concrete for street light and traffic signal foundations shall be 560-C-3250 per section 201-1, SSPWC.

TABLE B

CITY OF CARLSBAD
STREET LIGHT SPACING CRITERIA

STREET CLASSIFICATION	RESIDENTIAL AND COMMERCIAL	INDUSTRIAL AND OPEN SPACE	ADJACENT TO SCHOOLS AND PARKS
Prime Arterial & Major Arterial Secondary Arterial	22,000 lumen 300' staggered 600' meas. on ea. side	22,000 lumen 400' staggered 800' meas. on ea. side	22,000 lumen 300' staggered 600' meas. on ea. side
Collector	9,500 lumen 250' staggered 500' meas. on ea. side	9,500 lumen 350' staggered 700' meas. on ea. side	9,500 lumen 200' staggered 400' meas. on ea. side
Industrial	9,500 lumen 300' staggered 600' meas. on ea. side	9,500 lumen 400' staggered 800' meas. on ea. side	----------
Local	9,500 lumen at all intersections 250' staggered 500' meas. on ea. side	9,500 lumen at all intersections and at mid-block	9,500 lumen 200' staggered 400' meas. on ea. side
Cul-de-Sac	9,500 lumen at intersection at far end of bulb at mid-block if greater than 300' in length	9,500 lumen at intersection at far end of bulb (see industrial street if applicable)	9,500 lumen 200' staggered 400' meas. on ea. side

NOTES:

1. Intersections of prime, major and secondary arterials with each other will require minimum lighting of 22,000 lumen lights at each corner with shielding.

2. Areas of sensitive environmental or scenic concern shall require special treatment (e.g., adjacent to ocean, lagoons, and wildlife refuges).

3. The above criteria are minimum lighting requirements. Special circumstances may require additional lighting to provide for public safety. Examples of special circumstances include, but are not limited to, hidden driveway locations, high use crossings, high use driveways, road hazards such as dips and curves, public and private gathering points, bus stops and others.

4. 9,500 Lumen Lights = 100W high pressure sodium lamps.
   22,000 Lumen Lights = 200W high pressure sodium lamps.

11. TRAFFIC SIGNALS

A. The developer shall submit a design for the construction or modification of traffic signals which are required as a condition of that development. The design shall be in accordance with the Caltrans Standard Specifications and Standard Plans, Caltrans Traffic Manual, and the City of Carlsbad Standard Special Provisions for Construction (CCSSPC).

B. All work at or near an intersection shall include interim traffic control and replacement of loop detectors if damaged or modified.

C. Interconnect conduit and cable and advance warning devices shall be incorporated into all traffic signal designs and construction as required by the City Engineer

D. Prior to beginning design of a traffic signal plan or modification to an existing signal, a pre-design meeting shall be held with the City Traffic Engineer or his designated representative.

E. All traffic signals shall incorporate a video detection system, Type 170E controller, Type 200SA local intersection control program and E.V.P.E. (Emergency Vehicle Preemption Equipment). The Model 332 cabinet shall be aluminum. Type III meter pedestals shall conform to Caltrans requirements and SDG&E Service Guide specifications. For advanced setback distances greater than 300 feet, Type B inductive loop detectors shall be used to augment video detection system.

F. All traffic signal plans or intersection design plans, shall include the ultimate layout of the intersection shown. Existing, proposed, and future improvements shall be shown, including utilities. An interim signing and striping plan shall be required as necessary.

G. Prior to installation of any traffic signal, written authorization from the City Engineer shall be obtained. A note to this effect shall be placed on the cover page of the signal plans.

H. All traffic signal plans shall be submitted as a separate set of improvement plans for the associated project. Plancheck fees shall be paid for this review. Therefore, include a separate estimate of construction costs with submittal.

I. For new traffic signal installations, signal cable shall be installed in lieu of individual conductors.

J. Electrical service location shall be obtained from SDG&E and shown on plans.

12. TRAFFIC SIGNING AND STRIPING

A. All collector and arterial street improvement plans shall include traffic striping and signing designs on a separate sheet(s) (1”=40’-scale recommended).

B. All striping and signing plans shall conform to the latest edition of the State of California Department of Transportation Traffic Manual and Standard Drawings. Additionally, street signs shall meet the requirements outlined in the "City of Carlsbad Street Sign Information and Specifications" available at the Engineering counter and attached herewith in Appendix "B".

C. All traffic signing and striping plans shall be reviewed along with the complete set of improvement plans for the associated project. Plancheck fees shall cover this review. Include estimate of construction costs with submittal.

D. The developer shall furnish and install street name and traffic signs to the satisfaction of the City Engineer.

E. Two street name signs shall be located on one Telspar post at every intersection, except signalized intersections.

F. "STOP" signs (R1) and STOP AHEAD (W17) signs shall be located on local collector intersections and above, where required by the City Engineer. STOP signs shall be augmented with a 12” white limit line and a STOP pavement legend at each location.

G. "NOT A THROUGH STREET" (W53) sign shall be used when the end of the cul-de-sac cannot be seen from the intersection.

H. Other signs ("NO PARKING" or other regulatory signs) may be required by the City Engineer.

I. Street lights shall be shown on signing and striping plans.

J. Whenever possible, mount signs on street light poles.

13. TRAFFIC CONTROL PLANS

A. Pavement markings shall be in conformance with the criteria as presented in Chapter 6 of the latest edition of the State of California Department of Transportation Traffic Manual.

B. All crosswalks, limit lines, pavement arrows and pavement legends shall be thermoplastic unless otherwise specified. All pavement arrows and legends shall be the latest version of the CalTrans metric stencil.

C. Fire hydrant pavement markers shall be included in construction of any project in conformance with SDRSD M-19.

D. When roadway improvement will impact an existing roadway in a manner not covered by the California Department of Transportation Traffic Manual, improvement plans shall include traffic control/detour plans. Prior to design of control/detour plans, a pre-design meeting should be held with Engineering Department staff.

E. Detour plans and traffic control plans shall be based upon Chapter 5 of the latest edition of the State Traffic Manual "Manual of Traffic Controls" and the Standard Specifications for Public Works Construction (Green Book). These detour plans shall be submitted accompanying improvement plans for the proposed development and conform with the provisions of Engineering Policy 29.

F. Any deviation from approved traffic control plans shall be approved by the City Engineer or his representative prior to change in field.

15. GUARDRAILS

A. Guardrails shall be provided for secondary arterials, and above, along the tops of slopes adjacent to roadways in accordance with Chapter 7-01 of the California Department of Transportation Traffic Manual or as required by the City Engineer. Guardrail may be required on local or collector streets on the outside of curves where slopes and vehicle speeds warrant.

B. Typically, sidewalks shall be located behind guardrails.

C. Guardrail shall conform with the applicable SDRSD. Additional right-of-way may be required to accommodate flare sections.

D. Guardrail shall not encroach into required intersection sight distance corridor areas.

16. DRIVEWAYS

	MAXIMUM*	MINIMUM*	TYPE
Multi-Family Residential/Commercial	34 Feet/40 Feet	24 Feet	7-1/2" PCC
Residential	30 Feet	12 Feet	5-1/2" PCC
Maximum Width: Residential - 40% of lot frontage Commercial and Industrial - 50% of lot frontage			

Typical X = 3' "X" being the dimension of curb height transition.

*Clear width measured at bottom of "X", modification may be permitted if approved by the City Engineer.

A. Minimum clear distance between driveways on same property: 2'.

B. Minimum clear distance from property line: 3' if sidewalk is contiguous to curb, 0’ if non-contiguous.

C. Minimum distance from curb return: 0' - no encroachment.

D. Minimum distance from fire hydrant, street lights and other aboveground utilities: 5'.

E. Grades - see GS-15.

F. A minimum of 6” approved base material shall be placed under all driveways within the right-of-way.

G. Driveways within cul-de-sacs may require special design.

NOTE: All dimensions (A-D) are to top of "X" unless otherwise noted.

17. MONUMENTATION

A. Centerline monuments (SDRSD M-10) shall be installed at the P.I. of all curves if found within the paved roadway (otherwise at the E.C. and B.C.), at the centerline intersection of all streets, at the radius point of all cul-de-sacs, where the boundary line crosses a street centerline and at a maximum of 1000’ on straight runs. A 5.0' offset may be used to avoid conflicts with access covers. Monuments shall be shown on improvement plans.

B. Survey tie information shall be submitted to the City Engineer for all public streets monumented. Said information shall be submitted and accepted by the City Engineer prior to release of monumentation securities.

18. HILLSIDE STREETS

A. Hillside streets shall be designed on a case-by-case basis in accordance with the general guidelines established in these Standards and Chapter 21.95 of the Carlsbad Municipal Code (Hillside Ordinance).

B. Hillside streets shall be defined as those streets which traverse landforms with a slope in excess of 25% and do so in an environmentally sensitive manner. Special consideration may also be given to streets which traverse lands with slopes between 15% and 25% with the approval of the City Engineer.

C. Hillside street design criteria are as shown on Table A. Modifications may be made to this criteria with the approval of the City Engineer on a case-by-case basis. Such modifications may include, but not be limited, to the following:

1) Split roadways which step down the hillside and reduce grading quantities.

2) Off-set crown or tipped roadway sections.

3) Deletion of sidewalks on one or both sides.

4) Reduction of tangent requirements or introduction of compound, broken back or reversed curves.

D. Where street widths have been reduced, the use of parking bays and scenic view turnouts are recommended.

E. Consistent with the Hillside Ordinance, the use of "notch" or "gunsight" road cuts through hills shall be avoided.

F. A skid resistant top course asphalt overlay will be required on all hillside streets when grades exceed 7% or where horizontal curve radii are less than 200'.

19. STREET WIDTH AND IMPROVEMENT STANDARDS VARIANCE

A. Where the literal interpretation and enforcement of these standards would result in environmental degradation or be inconsistent with the general purpose of these standards, formal written requests to vary from these standards shall be made to the City Engineer.

In all cases, the variance shall be in harmony with the general purpose and intent of the standards and with the health, safety and general welfare of the public.

B. The areas wherein the design standards for street widths and improvements may be deleted or modified, may include, but not be limited to, narrowing the right-of-way width, narrowing of the roadway width, deletion of sidewalks, deletion of curbs, separation of opposing traffic lanes around sensitive environmental features, reduction of lighting standards in sensitive environmental habitats and other design modifications consistent with the conditions and intent of this section.

C. Design standard variances as determined by the City Engineer may include, but not be limited to, street width, median width, sidewalk deletions, horizontal alignments, vertical alignments, environmental issues, or design variations that could lead to a substantial conformance issue, driveway locations, and street accessory improvements.

D. Before a standards variance may be granted, it shall be determined:

1) That there are extraordinary or unusual circumstances or conditions applicable to the situation or surrounding property necessitating a variance of the standards.

2) That the granting of such variance will not cause substantial drainage problems.

3) That the granting of such variance will not conflict with existing or future traffic and parking demands or pedestrian or bicycle use.

4) That the granting of such variance will not be detrimental to the public welfare or injurious to the property or improvements in the vicinity in which the variance is granted.

5) That the granting of such variance will not adversely affect the comprehensive general plan.

E. The applicant or other affected party may file an appeal of the decision to the City Council within ten (10) days of City Engineer's written decision.